

Remarks

Upon entry of this response, claims 1-16 remain pending.

Applicants have invented a unique sealing assembly for a slidably movable pin of a lubricant injector. Key features of the assembly are two distinct seals surrounding the pin for sealing against leakage from the injector body along the pin. The seals include a low-pressure sealing member and a high-pressure sealing member, each being in sealing contact between the pin and body. In combination, the seals function to effectively seal against leakage of lubricant from the injector body at both high and low pressures.

I. Claims 1-12

Claim 1 recites a lubricant injector having, among other elements, a body containing a reciprocal piston and a pin extending from the piston through an opening in the body. A sealing assembly in the opening surrounds the pin for sealing against leakage of lubricant from the body along the pin. The sealing assembly comprises a low-pressure sealing member in sealing contact between the pin and the body effective for sealing at low pressures, and a high-pressure sealing member in sealing contact between the pin and the body effective for sealing at pressures higher than said low-pressure sealing member.

The art of record, whether alone or in combination, fails to show or suggest the claimed lubricant injector.

U.S. Patent No. 2,509,436 (Isenbarger) shows a packing assembly for sealing between a reciprocable shaft and a bore of a housing. Referring to Fig. 3 of that patent, the assembly includes a V-shaped packing member (17) in sealing

engagement with the shaft (10). A flat cushioning washer (22) underlies the packing member. It is made of a flexible fibrous material, such as leather, which compresses in the shaft's axial direction without significant expansion in the radial direction (see column 5, lines 28-32). The purpose of the cushioning washer (22) is to inhibit radial expansion and wear of the packing member (17), thereby lengthening life of the packing member (see column 1 line 53 to column 2 line 4, and also column 5 lines 44-51). The cushioning washer (22) is spaced from the shaft (10) and housing (12), as shown on Fig. 3 and illustrated by annular space "I" on Fig. 5.

U.S. Patent No. 6,142,393 (Kotyk) shows a cap seal for covering a lubricant injector. An indicator pin (32) is connected to a reciprocal piston (18) and extends from the injector body (14). A conventional washer (38) and packing seal (40) surround the pin and are positioned against an internal shoulder (42).

Applicants respectfully assert that the cited references do not make obvious the claimed invention. Isenbarger fails to show or suggest, as recited in claim 1, an injector sealing assembly with a low-pressure sealing member and a high-pressure sealing member effective for sealing at pressures higher than the low-pressure sealing member. In contrast, Isenbarger shows only a single seal (i.e., the packing member (17)). The cushioning washer (22) is not a seal. It is not in sealing contact between the shaft and the body, but rather remains spaced from them. Kotyk does not add the missing elements, as it also shows a single seal (40). There is no suggestion that Kotyk's washer (38) is capable of sealing the injector body from leakage.

Because the cited references, alone or in combination, fail to show or suggest every element of claim 1, Applicants respectfully request that the rejection of claim 1 be withdrawn.

Claims 2-12, depending directly or indirectly from claim 1, are submitted as patentable for the same reasons as claim 1. Moreover, some of these claims recite additional features which are not shown in the prior art of record, including particularly U.S. Patents No. 3,782,736 (Valente) and No. 4,664,362 (Hennells). For example, claim 3 specifies that the low-pressure sealing member is generally flat. Claim 6 recites that the low-pressure sealing member and the high-pressure sealing member are disposed in face-to-face contact. Claim 8 specifies that the high-pressure sealing member is positioned below the low-pressure sealing member. Thus, for these additional reasons, Applicants request that the rejections of these claims be withdrawn.

II. Claims 13-16

Claim 13 recites a method of sealing a lubricant injector having a body with a reciprocal piston and a pin extending from the piston through an opening in the body. The method includes, among other steps, installing a low-pressure annular sealing member in position surrounding the pin in the opening such that an inner edge is in sliding sealing contact with the pin and an outer edge is in sealing contact with a surface of the body. The low-pressure sealing member is effective for sealing at low pressures. A high-pressure annular sealing member is installed in position surrounding the pin in the opening such that an inner surface is in sliding sealing contact with the pin and an outer surface is in sealing contact with said surface of the body. The high-pressure sealing member is effective for sealing at pressures higher than said low-pressure sealing member.

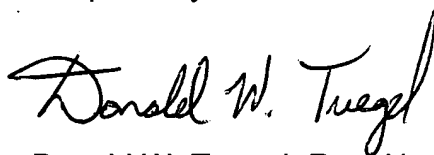
As discussed above, Isenbarger and Kotyk fail to show or suggest a lubricant injector with a low-pressure sealing member and a high-pressure sealing member. The references also fail to disclose or suggest a method of sealing an injector with steps of installing these sealing members. Because the cited references, alone or

in combination, fail to show or suggest every element of claim 13, Applicants respectfully request that the rejection of claim 13 be withdrawn. Claims 14-16, each depending directly from claim 13, are patentable for the same reasons as claim 13.

III. Conclusion

In view of the above, a favorable action and Notice of Allowance are respectfully requested.

Respectfully submitted,

A handwritten signature in black ink, reading "Donald W. Tuegel". The signature is fluid and cursive, with the first name "Donald" and last name "Tuegel" clearly legible.

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